

CLAIMS

What is claimed is:

1. An image transfer assembly for use with an image forming device, said image transfer assembly comprising:
 - a plurality of image forming units transferring print material to a media substrate,
 - each of said plurality of image forming units comprising a photoconductive unit and a transfer device positioned to receive the media substrate therebetween; and
 - a first power supply coupled to at least two of said transfer devices and supplying a voltage thereto.
2. The image transfer assembly of claim 1, wherein the voltage supplied by said first power supply is substantially the same for each of said at least two transfer devices.
3. The image transfer assembly of claim 1, wherein the voltage generated by said first power supply is different for each of said at least two transfer devices.
4. The image transfer assembly of claim 3, wherein the plurality of image forming units comprises a first image forming unit and a second image forming unit, said first image forming unit receiving said media substrate before said second image forming unit, said first image forming unit comprising a first transfer device and said second image forming unit comprising a second transfer device, said first and second transfer devices being coupled to said first power supply, wherein the voltage of the second transfer device is greater than the voltage of the first transfer device.

5. The image transfer assembly of claim 4, wherein said first image forming unit comprises black print material.
6. The image transfer assembly of claim 5, where said second image forming unit comprises yellow print material.
7. The image transfer assembly of claim 3, wherein said first power supply comprises a plurality of Zener diodes to generate the different voltages for each of said at least two transfer devices.
8. The image transfer assembly of claim 1, further comprising a second power supply coupled to another one of said transfer devices.
9. The image transfer assembly of claim 8, wherein a voltage range of said first power supply is substantially the same as a voltage range of said second power supply.
10. The image transfer assembly of claim 9, further comprising a third power supply coupled to another one of said transfer devices, wherein a voltage range of said third power supply is greater than the voltage range of said first and second power supplies.
11. The image transfer assembly of claim 1, wherein the voltage supplied to said at least two transfer devices is substantially constant during operation of said image forming device.

12. An image transfer assembly for use with an image forming device, said image transfer assembly comprising:
- a first image forming unit transferring a first print material to a media substrate, said first image forming unit comprising a first photoconductive unit and a first transfer device;
 - a second image forming unit transferring a second print material to said media substrate, said second image forming unit comprising a second photoconductive unit and a second transfer device;
 - a third image forming unit transferring a third print material to said media substrate, said third image forming unit comprising a third photoconductive unit and a third transfer device;
 - a first power supply coupled to said first and second transfer devices and supplying a first voltage thereto; and
 - a second power supply coupled to said third transfer device and supplying a second voltage thereto;
- wherein said first and second voltages creates a voltage potential between respective ones of said photoconductive units and said transfer devices to facilitate the transfer of respective ones of said print material to said media substrate.
13. The image transfer assembly of claim 12, wherein the first voltage supplied to said first and second image forming units is substantially the same.
14. The image transfer assembly of claim 12, wherein said first image forming unit receives said media substrate before said second image forming unit, and wherein said

first voltage supplied to said second image forming unit is greater than said first voltage supplied to said first image forming unit.

15. The image transfer assembly of claim 12, wherein said first print material is black.

16. The image transfer assembly of claim 15, wherein said second print material is yellow.

17. The image transfer assembly of claim 12, wherein a voltage range of said first power supply is substantially the same as a voltage range of said second power supply.

18. The image transfer assembly of claim 12, further comprising:
a fourth image forming unit transferring a fourth print material to said media substrate, said fourth image forming unit comprising a fourth photoconductive unit and a fourth transfer device; and
a third power supply coupled to said fourth transfer device and supplying a third voltage thereto, said third voltage creating a voltage potential between said fourth photoconductive unit and said fourth transfer device to facilitate the transfer of said fourth print material to said media substrate;
wherein a voltage range of said third power supply is greater than a voltage range of said first and second power supplies.

19. An image forming device comprising:
- an image transfer assembly;
 - a fuser; and
 - a housing supporting said image transfer assembly and said fuser;
- said image transfer assembly comprising:
- a first image forming unit transferring black print material to a media substrate,
 - said first image forming unit comprising a first photoconductive unit and a first transfer device;
 - a second image forming unit transferring yellow print material to said media substrate, said second image forming unit comprising a second photoconductive unit and a second transfer device;
 - a third image forming unit transferring one of cyan and magenta print material to said media substrate, said third image forming unit comprising a third photoconductive unit and a third transfer device;
 - a fourth image forming unit transferring the other of cyan and magenta print material to said media substrate, said fourth image forming unit comprising a fourth photoconductive unit and a fourth transfer device;
 - a first power supply coupled to said first and second transfer devices and supplying a first voltage thereto;
 - a second power supply coupled to said third transfer device and supplying a second voltage thereto; and
 - a third power supply coupled to said fourth transfer device and supplying a third voltage thereto;
- wherein said first, second and third voltages create a voltage potential between respective ones of said photoconductive units and said transfer devices to facilitate the transfer of respective ones of said print material to said

media substrate, said fuser causing said print material to bond to said media substrate.

20. The image forming device of claim 19, further comprising a transport belt coupled to said housing and moving said media substrate to each of said image forming units.

21. The image forming device of claim 19, wherein a voltage range of said first power supply is substantially the same as a voltage range of said second power supply.

22. The image forming device of claim 19, wherein a voltage range of said third power supply is greater than a voltage range of said first and second power supplies.

23. A method of supplying power to an image forming device, said image forming device comprising an image transfer assembly, said image transfer assembly comprising a plurality of image image forming units, each of said image image forming units comprising a photoconductive unit and a transfer device positioned to receive a media substrate therebetween, said method comprising:

supplying a voltage to at least two of said transfer devices from a single power supply creating a voltage potential between respective one of said photoconductive units and said transfer device to facilitate the transfer of print media to said media substrate.

24. The method of claim 23, wherein supplying a voltage to at least two of said transfer devices from a single power supply creating a voltage potential between respective one of said photoconductive units and said transfer device to facilitate the transfer of print media to said media substrate comprises supplying substantially the same voltage for each of said at least two transfer devices.

25. The method of claim 23, wherein supplying a voltage to at least two of said transfer devices from a single power supply creating a voltage potential between respective one of said photoconductive units and said transfer device to facilitate the transfer of print media to said media substrate comprises supplying a different voltage for each of said at least two transfer devices.

26. The method of claim 23, further comprising supplying a voltage from a second power supply to another one of said transfer devices, wherein a voltage range of said single power supply is substantially the same as a voltage range of said second power supply.

27. The method of claim 26, further comprising supplying a voltage from a third power supply to another one of said transfer devices, wherein a voltage range of said third power supply is greater than the voltage range of said single power supply and said second power supply.

28. The method of claim 23, wherein the voltage supplied by said single power supply is substantially constant during operation of said image forming device.

29. A method of printing comprising:
- moving a media substrate to a first image forming unit;
 - applying a first voltage from a first power supply to said first image forming unit
 - facilitating the transfer of a first print material from said first image forming unit to said media substrate;
 - moving said media substrate to a second image forming unit;
 - applying said first voltage from said first power supply to said second image forming unit facilitating the transfer of a second print material from said second image forming unit to said media substrate.
30. The method of claim 29, further comprising moving said media substrate to a third image forming unit and applying a second voltage from a second power supply to said third image forming unit facilitating the transfer of a third print material from said third image forming unit to said media substrate.
31. The method of claim 30, further comprising moving said media substrate to a fourth image forming unit and applying a third voltage from a third power supply to said fourth image forming unit facilitating the transfer of a fourth print material from said fourth image forming unit to said media substrate.

32. A method of determining the impedance of an image transfer device connected to a power supply providing a variable voltage, comprising:
- altering the voltage applied to said image transfer device by said power supply;
 - sensing at least one predetermined current of said image transfer device as said applied voltage is altered; and
 - determining the impedance of said image transfer device based on said predetermined current and the applied voltage at the time said predetermined current was sensed.
33. The method of claim 32, further comprising adjusting the voltage applied to said image transfer device, based on said determined impedance, to achieve a desired transfer current.
34. The method of claim 32, further comprising generating a transfer current threshold indicating signal indicative of sensing at least one predetermined current.
35. The method of claim 34 wherein sensing at least one predetermined current of said image transfer device as said applied voltage is altered comprises sensing at least two predetermined currents of said image transfer device as said applied voltage is altered.
36. The method of claim 35 further comprising outputting a single transfer current threshold indicating signal indicative of said at least two predetermined currents.

37. An electrical circuit operative to monitor image transfer device current, and having a single circuit output indicative of two different image transfer device current thresholds, comprising:

a first comparison circuit operative to compare said image transfer device current to a first predetermined current; and
a second comparison circuit operative to compare said image transfer device current to a second predetermined current;
wherein the outputs of said first and second comparison circuits are combined to generate said single circuit output indicative of two different image transfer device current thresholds.

38. The circuit of claim 37 wherein said single circuit output assumes a first logic level when said image transfer device current is below said first predetermined current or above said second predetermined current.

39. The circuit of claim 37 wherein said single circuit output assumes a second logic level when said image transfer device current is between said first predetermined current and said second predetermined current.

40. The circuit of claim 37 wherein said first and second comparison circuits comprise comparators, each comparing a sensed voltage comprising a voltage drop across a sense resistor carrying said image transfer device current to first and second reference voltages, respectively.

41. The circuit of claim 40 wherein said first reference voltage is connected to an inverting input of said first comparator, and said second reference voltage is connected to a non-inverting input of said second comparator.

42. The circuit of claim 40, wherein the outputs of said first and second comparators are connected together, and pulled to a high logic level by a pull-up resistor.

43. A method of applying a predetermined transfer current to an image transfer device, comprising:
- measuring the instantaneous impedance of said image transfer device; and
 - applying a voltage to said image transfer device based on said measured impedance, to produce said predetermined transfer current.
44. The method of claim 43 wherein measuring the instantaneous impedance of said image transfer device comprises:
- altering a voltage applied to said image transfer device by said power supply;
 - sensing at least one predetermined current of said image transfer device as said applied voltage is altered; and
 - determining the impedance of said image transfer device based on said predetermined current and the applied voltage at the time said predetermined current was sensed.
45. The method of claim 44 wherein sensing at least one predetermined current of said image transfer device as said applied voltage is altered comprises:
- directing said image transfer device current through a resistive element of a predetermined value; and
 - comparing the voltage drop across said resistive element to a predetermined reference voltage.
46. The method of claim 44 wherein sensing at least one predetermined current of said image transfer device as said applied voltage is altered comprises sensing two different predetermined currents.